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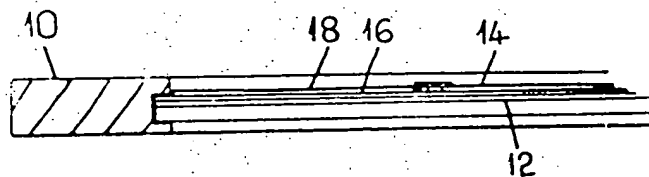
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## (54) Simulated Stained Glass Windows

(57) A method of producing multi-coloured glass windows involves the application of coloured inks 14 to a pane of glass 12 using a screen printing process and protection of the printed surface either by means of lacquer or varnish 16 or a second sheet of glass which may to advantage be spaced from the first to form a double-glazed window unit.

Modifications of the basic design involve the use of opaque inks to define lines or areas within the window so that when the window is illuminated from one side and viewed from the other the coloured areas are brought into relief by the dark black lines or regions of opaque ink.

Further modifications involve the sticking of strips of lead along the joins between the different coloured regions so as to simulate leaded light windows.



The drawings originally filed were informal and the print here reproduced is taken from a later filed formal copy.

GB 2 045 326 A

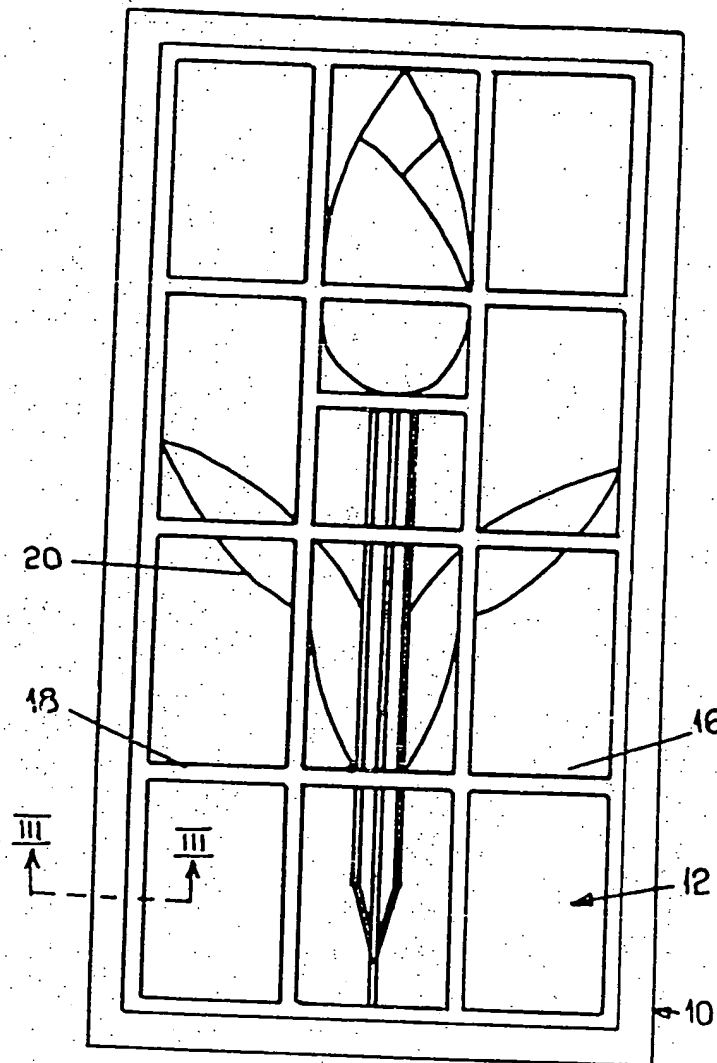


FIG. 1

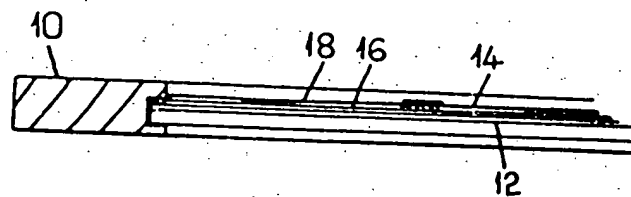


FIG. 3

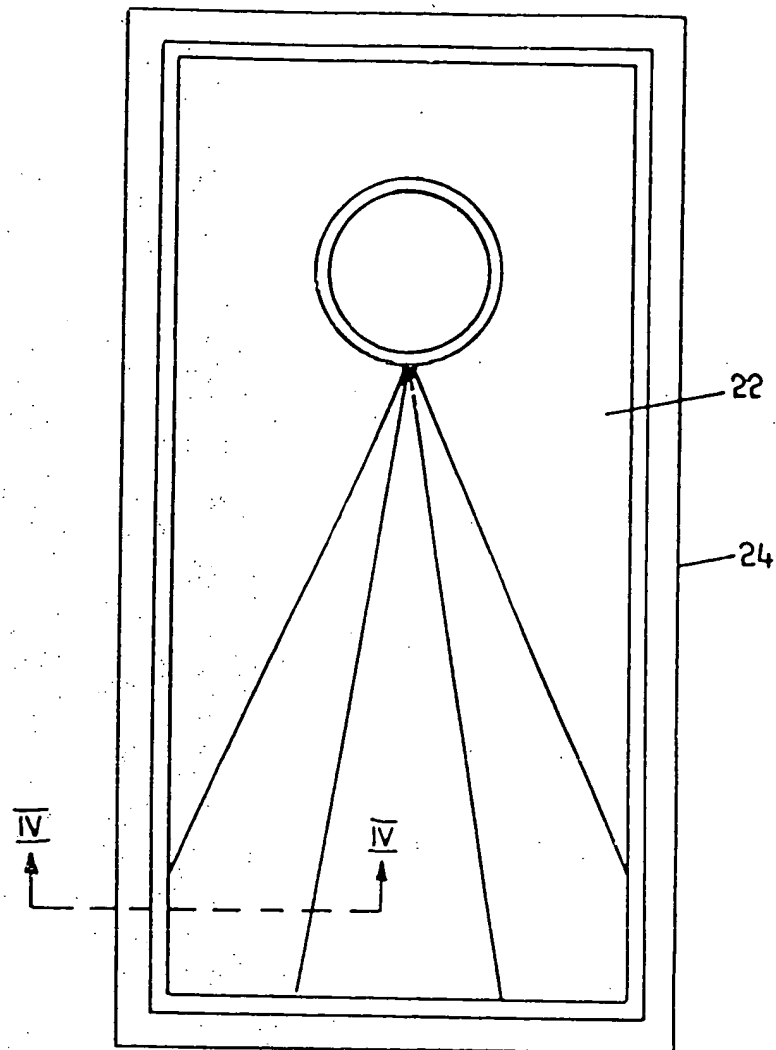


FIG. 2

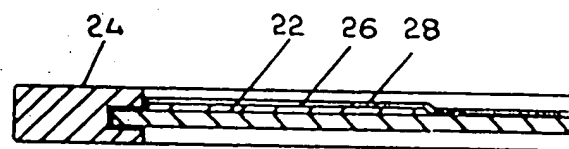


FIG. 4

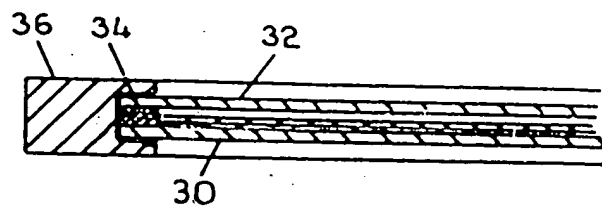


FIG. 5

## SPECIFICATION

## Improvements in and Relating to Windows

## Field of Invention

This invention concerns windows and particularly coloured and patterned windows.

## Background to the Invention

It is known to produce pleasing effects in window design by constructing a window from a plurality of different pieces of glass, separated and secured in place by metal strips. The durability of lead has meant that this material has been favoured for use in forming the strips for such windows and the glass in such windows has been either clear or coloured. Whilst the mode of construction has been predominantly used in churches and public buildings it has also been employed in domestic property and the mode of construction is known as leaded lights.

The construction of leaded light windows is very expensive since it not only requires the fabrication of the metal framework within which to fit shaped pieces of glass but also requires the accurate cutting of the glass to fit the apertures in the framework. Where coloured patterns are required there is the additional expense of providing suitably coloured glass.

In an attempt to reduce the cost but still retain the visual appearance of a leaded light window, it is known to stick lead strips in patterns to one (or both) sides of plain glass windows. However, even this procedure is expensive and a simulated leaded light window, whilst attractive, does not have the interest which exists in an original leaded light window in which the individual panes of glass rarely occupy the same plane thereby producing a multi-facet window which reflects light at many different angles. Thus a plain glass true leaded light window has a certain beauty and characteristic appearance which cannot be simulated using a single pane of glass. Furthermore the process does not allow for coloured patterns to be formed since the process can only be applied to a single sheet of glass and since the strips do not themselves support the glass but in fact the reverse is the case.

Whilst there will no doubt always be a demand for original leaded light windows in certain situations, in the field of domestic property in particular and particularly in the field of property renovation involving buildings containing multi-coloured leaded light windows, the cost is prohibitive. Consequently many buildings which would either benefit from multi-coloured glass windows or need such windows to allow true renovation are not being fitted with such windows.

It is therefore an object of the present invention to provide a method of producing a multi-coloured glass window.

It is a subsidiary object of the present invention to provide a method of producing a multi-coloured glass window having simulated leaded lights.

## The Invention

According to one aspect of the present invention a method of producing a multi-coloured window comprises the steps of:—

applying to a pane of glass a pattern of differently coloured inks by a series of screen printing steps,

coating the printed surface of the pane with a clear varnish or lacquer to form a hard protective coating, and

mounting the pane in a frame.

Where double glazing is required, a second pane of clear glass may also be mounted in the frame parallel to and spaced from the printed pane, preferably with the printed surface of the first pane on the inside for extra protection.

Where specially strengthened glass is required a plain wire frame-work is embedded in glass of at least the first pane during manufacture in known manner. Hitherto such wired glass has usually employed a close knit wire mesh but it is to be understood that a more open mesh for example in the form of diamonds or rectangles may be employed, so defining relatively large areas of clear glass bounded by the wiring. The pattern of the wiring need not be regular and may indeed be in the form of a line drawing of some pictorial scene or pattern. By using appropriately patterned screens and aligning the screens and the glass, so the different coloured inks can be applied to different ones of the areas defined by the wire pattern, and the latter, being opaque will produce a pleasing dark line, pseudo leaded light effect.

In the alternative, strips of lead or metallised plastics material may be stuck to the first pane of glass after it has been printed, along the boundaries of the differently coloured areas to produce an even more realistic leaded light effect. Clearly this latter procedure is more costly but a true multi-colour albeit pseudo leaded light window will result and it has the advantage over the wire method of not requiring accurate alignment of the screens relative to a pattern of lines of wire embedded in the glass. There is of course always the requirement for accurate registration of the screens to produce appropriate printing of differently coloured areas without overlap.

Where no wiring or leading is desired, dark lines may be formed in the pattern by appropriate printing using a screen with a pattern of lines thereon and a particularly dense black ink for this step of the printing process.

According to another aspect of the present invention and particularly where a double glazed window unit is to be used, a similar coloured glass window effect may be obtained by screen printing processes onto a sheet of Perspex (Registered Trade Mark) or very thin glass and supporting this within window frame bounded on both sides by the conventional glazing panels.

According to a further aspect of the present invention, where the expense of double glazing is not required but full protection for the printing is

required by means of a glazed layer on both sides, the invention provides a further alternative method of production involving the steps of:—

- 5 applying to one face of a pane of glass a pattern of differently coloured inks by a series of screen printing steps.

- 10 laying a second pane of glass over the first pane of glass so that the printed surface of the first mentioned pane of glass is sandwiched between the two panes of glass, and

bonding the two panes of glass around their adjoining peripheral edges using a sealant and a frame so that the two panes of glass effectively become as one.

- 15 The advantage of this further aspect of the invention is that there is no need to form a layer of clear varnish or lacquer as a protective coating over the printing and the window so constructed can therefore be cleaned in conventional manner on both surfaces without risk of damage to the printing.

- 20 The inks used for the printing must be translucent so as to allow a certain amount of light to pass through them. For special effects less translucent inks may be used so as to produce particularly dense dark colours. Where outlining or simulated leaded light is required the inks used for the outlines will be opaque so as to be clearly visible when the window is illuminated from one side and viewed from the other.

A range of inks which may be used in the method of the invention are those marketed under the Trade Mark Sericol and in particular the Super Gloss screen inks produced under that name.

- 35 Where a varnish is to be applied to the printed surface for protection, a suitable varnish is the Sericol GP Screen Varnish A13.

Sericol inks and varnishes are produced by the Sericol Group Limited of London, England.

- 40 It is envisaged that the present invention will allow the owners of domestic dwelling houses and similar properties to enhance the appearance of their properties by the judicious use of coloured or multi-coloured windows and because the design is printed on the glass by a relatively cheap process, a large number of different designs will be available at relatively low cost so that a high degree of individuality and choice can be introduced. Thus in relatively high density housing where the same design of house is often repeated many times, individuality and variation can be introduced by the owners of the houses or the builders or even at the design stage by introducing appropriate multi-coloured windows into selected locations in some or all of the properties.

- 55 In addition to the decorative value, the coloured glass will provide a degree of privacy and this factor can be used to advantage both in domestic dwellings and in offices and shops.

The invention will now be described by way of example with reference to the accompanying drawing.

#### In the Drawing

- 65 Figure 1 is an example of a reproduction leaded light stained glass window.

Figure 2 is an example of a second multi-coloured window employing a modern design.

- 70 Figure 3 is a cross-section to an enlarged scale of the window in Figure 1.

Figure 4 is a cross-section to an enlarged scale of the window shown in Figure 2, and

- 75 Figure 5 is a cross-section through a double-glazed window unit again to an enlarged scale in which one of the panes includes a coloured design applied in accordance with the invention.

#### Detailed Description of Drawings

- 80 Figure 1 shows a frame 10 within which a pane of glass 12 is located. One surface of the pane of glass is screen printed differently coloured areas using translucent inks such as those from the Sericol range of Super Gloss screen inks. The differently coloured areas define a pattern. The layer of inks is shown in the enlarged scale cross-section in Figure 3 at 14.

- 85 Over the layer of inks is a protective layer of varnish or lacquer 16 (again best shown in Figure 3) which is typically a GP Screen Varnish Type A13 also from the Sericol range.

- 90 Lastly referring to Figures 1 and 3 again, a rectangular pattern of lead strips of which one is denoted by reference numeral 18 are laid over the lacquered surface and bonded thereto by appropriate adhesive so as to define a typical leaded light pattern. In addition thinner lead strips such as 20 are fitted along the junctions between the differently coloured regions in the pattern so as to simulate a true leaded light window which when viewed from a distance will represent a very close approximation of a true leaded light window. The relatively thick lead strip 18 is clearly visible in Figure 3.

- 100 Figure 2 shows an alternative design of a more modern type applied to a similar sized window. Here again reference is made to the enlarged scale cross-section through a part of the window shown in Figure 2 as contained in Figure 4.

- 105 The construction of the window shown in Figure 2 involves the fitting of a single pane of glass 22 within a frame 24 and screen printing different coloured areas onto one surface of the glass to provide a layer of translucent ink over the whole surface of the glass where colour is required as denoted by the layer 26 in Figure 4.

- 115 Purely for protection, a layer of lacquer or varnish such as that from the Sericol range of screen varnishes is applied over the surface of the inks to form a second layer 28.

- 120 Alternatively (not shown) the lacquer or varnish layer 28 can be dispensed with and a second pane of glass (not shown) may be fitted over the ink layer 26 and secured within the frame 24 with a suitable sealing bond around the periphery of the two panes of glass so as to prevent the ingress of dirt and moisture. This alternative embodiment not illustrated clearly has a stronger surface for cleaning purposes on both sides and

would thus have advantages in the domestic environment.

Figure 5 of the drawing is a cross-section to an enlarged scale through a further embodiment of the invention for which there is no corresponding plan view. This illustrates how a double-glazed window unit may be constructed using a first pane of glass 30 having applied to the upper surface thereof screen inks such as those from the Sericol range so as to define differently coloured regions on the upper surface of the glass. A second clear glass pane 32 is located above the first pane 30 and is held in place by means of a spacer such as 34 located around the periphery of the two panes of glass so as to separate the two panes and also seal the cavity between the two panes and the edges of the panes are retained within a bounding frame 36 of wood or metal or plastics material.

## 20 Claims

1. A method of producing a multi-coloured window comprising the steps of:—

applying to a pane of glass a pattern of differently coloured inks by a series of screen printing steps,

coating the printed surface of the pane with a clear varnish or lacquer to form a hard protective coating, and

mounting the pane in a frame.

2. A method as claimed in claim 1 in which the pane of glass includes a wire mesh framework embedded in the glass during manufacture and the pattern of differently coloured inks is aligned with the pattern of the wire framework during the printing process.

3. A method as claimed in claim 1 wherein lines or regions of the pane of glass are coloured by opaque ink of a dark colour so as to simulate metal strips or glazing bars or leaded light construction.

4. A method as claimed in claim 1 in which strips of lead or metallised plastics material are stuck to a pane of glass after it has been printed along the boundaries of the differently coloured areas to produce a simulated leaded light effect.

5. A method of producing a multi-coloured window comprising the steps of:—

applying to a first pane of glass a pattern of differently coloured inks by a series of screen

printing steps,

covering the printed surface of the pane with a second pane of clear glass,

bonding the two panes of glass together at least around their peripheral edges and

mounting the double panel of glass in a frame.

6. A method as claimed in claim 1 wherein the second pane of glass is spaced from the first pane of glass so as to form a cavity therebetween and thereby form a so-called double glazed window.

7. A method as claimed in claim 5 or 6 wherein opaque ink is used to define lines or regions within the pattern so as to simulate a metallised leaded light window or simply to enhance the pattern of differently coloured regions in the window by the outlining effect of the opaque ink.

8. A method as claimed in claim 5, 6 or 7 in which one or both of the panes of glass is strengthened by means of a wire framework embedded in the glass during manufacture.

9. A method of producing a multi-coloured window comprising the steps of:—

applying to a thin sheet of glass or clear plastics material a pattern of differently coloured inks by a series of screen printing steps,

covering the printed surface of the sheet with a second pane of glass which is cemented thereto by means of a clear cement at least around the periphery of the two sheets of glass and preferably over the entire two adjoining surfaces and

mounting the bonded sheets in a frame.

10. A method of producing a multi-coloured window as claimed in claim 9 in which a further pane of glass is mounted in spaced relation to the first bonded pane of glass with the thin sheet of glass or plastics material on the inside of the sandwich so as to provide added protection for the thin sheet of glass or plastics material, the spaced pane or glass being clear and being mounted within the same frame as the bonded pane or glass or within a subsidiary frame thereto.

11. Coloured glass windows when produced by a method as claimed in any one of the preceding claims.

12. Method of producing coloured glass windows substantially as herein described.

13. Coloured glass windows constructed substantially as herein described with reference to and as illustrated in the accompanying drawings.